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Public service innovation through the application of mobile-based smart city concepts in Sukun sub-district, Malang City

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Public service innovation through the application of mobile-based smart city concepts in Sukun sub-district, Malang City

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Abstract. Public service provides services to the public carried out by the government whose services can be in the form of goods, services, or administration. The sub-district is a public service provider from the application stage to the publication phase of the document. Where people need not go to several agencies to take care of licensing documents, but enough to come to the district in their respective regions. Districts as the spearhead of government administrators must carry out their functions as the embodiment of excellent public service. However, in reality, public services at the sub-district level are of poor quality. Less responsive, less informative, and convoluted bureaucracy is often a major problem in service. Even though in the current technological era, the sub-districts should adopt technology for their activities. Innovation in using smart city concept technology in sub-districts is the key to solving existing problems because integrating entities in the smart city concept can facilitate the exchange of information, speed of data exchange, and rapid decision-making by service officers the public. So that the public services organized by the sub-district become more quality.

1. Introduction
Sukun sub-district has an area of 2,655.19 ha which divided into 11 villages [1]. With such a large population, the local government's public services in this district included in the category of excellent service. But the reality is that limited facilities, infrastructure, and human resources are the main problems in maintaining this public service. For example, the number of residents is not comparable to the number of service employees. To makes the people who need the assistance have to be willing to queue for a few hours to get the intended service and limitations of facilities and infrastructure that have not fully supported.

Based on the above description, there are several problems faced by Sukun Sub-District of Malang City. Among others is Less responsive, where responses to various complaints, aspirations, and expectations of the community are often slow or even ignored. Less informative where information should be conveyed to the public, delayed, or even not to the public. And bureaucratic where the service is carried out through various levels, thus causing the completion of the service too long [2].

The above problems solved through several systems aimed explicitly at specific purposes such as information systems and integrated service systems. But the increasing system in an instance will increase the difficulty, especially for the community in using the system. Integration is currently a trending word in IT [3]; one of its applications is smart city concepts. Smart City as a concept of urban planning integrated with a wide range of development and combined with the development of

information and communication technology with the objectives among others, creating habitable, advanced and modern urban planning and development, improving regional productivity and economic competitiveness and building the foundation of Indonesia smart nation [2]. The concept of intelligent cities believed to be the solution to urban development in the area. Smart City designed to increase the productivity of the people who live in it so that the result of the structuring and management of the city done by utilizing information and digital technology optimally in all aspects—starting from building management system, environmental quality management, and public service.

In this article, the author tries to develop a public service information system with the concept of a smart city that integrates several services that can be accessed and used directly by the public in a mobile-based application. Mobile-based apps are the most appropriate application used as a connecting device between the Sukun sub-district government and the community. It hoped that this information system can help people access services easily and quickly.

2. Methods
The system development method used is the waterfall method. The waterfall method is a classic model that is systematic, sequential in building software. Here are the stages contained in the waterfall method that can be seen on figure 1, namely:
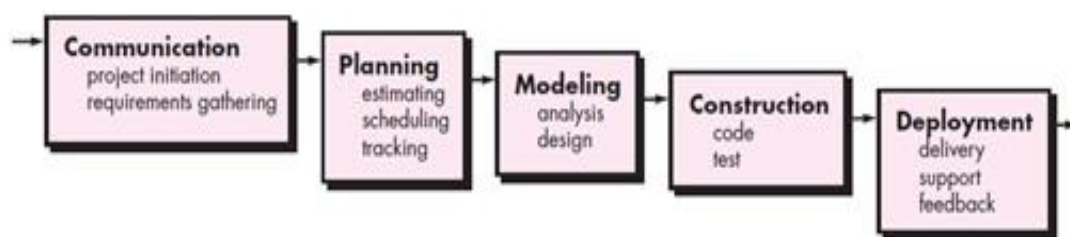

Figure 1. Waterfall software development model [3].

2.1. Communication
This step is an analysis of the needs of the software and the stage to conduct data collection by meeting with customers and collecting additional data in journals, articles, and the internet.

2.2. Planning
The planning process is a continuation of the communication (analysis requirement) process. This stage will generate a user requirement document or can be said as data related to the user's desire in the creation of software, including the plan to be carried out

2.3. Modelling
This modeling process will translate the requirements of need into a predictable software design before coding is created. The process focuses on designing data structures, software architectures, interface representations, and procedural details (algorithms). This stage will generate a document called software requirement.

2.4. Construction
Construction is the process of creating code. Coding or coding is a translation of a design in a language that can be recognized by a computer. The programmer will translate the transaction requested by the user. This stage is the real stage in working on software, meaning the use of the equipment will be maximized in this stage. After coding is complete, testing of the system has been done. The purpose of testing is to find errors to be corrected.

2.5. Deployment
This stage can be said to be final in the creation of a software or system. After doing the analysis, design, and encoding, the user uses the complete order. Then the software that has been created should be done maintenance periodically.

3. Program development

3.1. Changes in business processes in institutions
From the application to be created, the implementation will change existing business processes, business process changes can be seen in the following image:
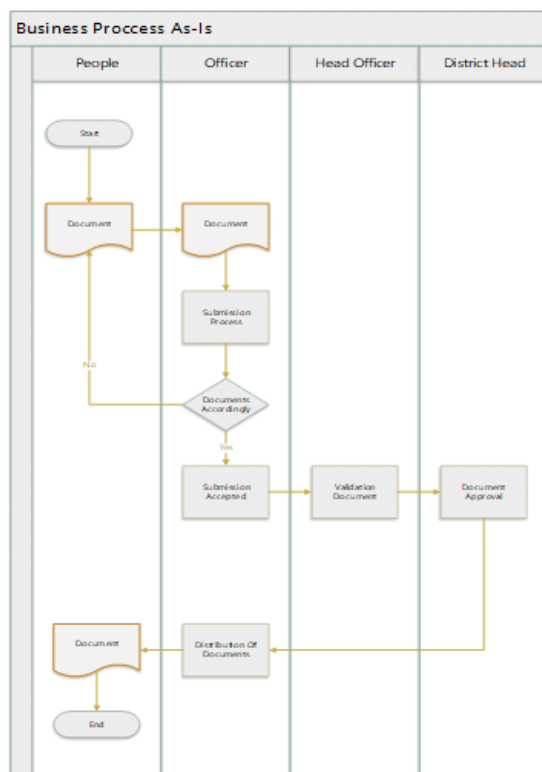

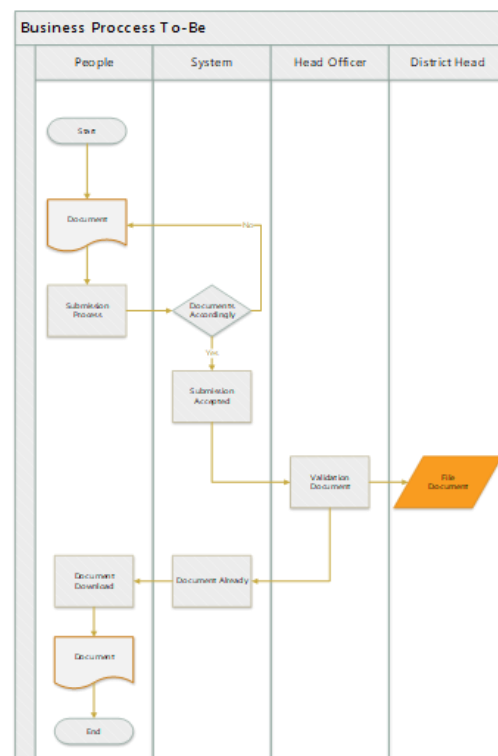**Figure 2.** Business Process As-Is.   **Figure 3.** Business Process To-Be.

The above picture explained that Business Process As-In (figure 2) as a previous business process wherein the processing of licensing documents will involve many parties that will rely heavily on the working officer. In contrast, in Business Process To-Be (figure 3) as a business process submitted, the method of processing documents will no longer depend on the officer ultimately, but instead return to the public, the officer only validates and approves the text and subsequently the system that will process it. In addition to speeding up preparing documents, this change can make it easier for the community to complete the process independently.

3.2. Application architecture design
The design of public service application architecture with Mobile Based Smart City Concept consists of the first user or user using the android platform that accesses the system with the internet network using the webserver. Then, the web server will display data or information retrieved from the database. The second user or user is the officer who plays in the government, who will later provide feedback or input. Presented by the first user. Here's the design of the app architecture, shown on figure 4:
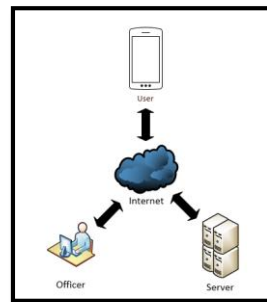
Figure 4. Application architecture.

3.3. Concept design

The concept of a smart city that existed only in developed countries is currently widely adopted by cities in Indonesia. For example, the Provincial Government of DKI Jakarta, Surabaya City Government, and Bandung City Government implemented a smart city. As a major city, especially the Sukun sub-district, Malang needs a breakthrough in supporting its government's performance to realize a sound governance system. Several ways have done by improving infrastructure, transportation, and other public services. But its nature is still limited and passive because there is no direct communication between the government and the community [4]. Therefore, it needs to designed in a system that can bridge the community and government in interacting. In addition to providing information directly to the community, the city can also participate in development through this system.

3.4. Program implementation

After doing the analysis and design stage, then the next step is the implementation of the program. The testing of this program aims to implement the design that has been created. The results of the application are as follows on figure 5 and figure 6:
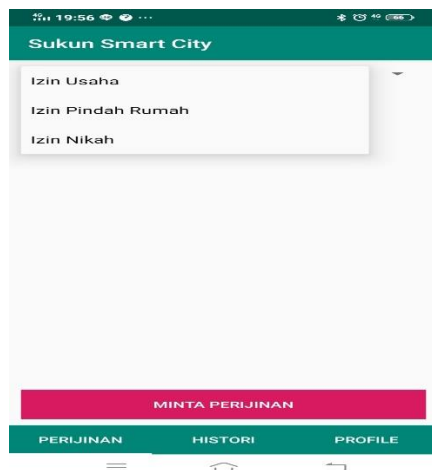

Figure 5. User layout menu.   **Figure 6.** Admin option menu.

The image above is the implementation of a system where there are admin logins and logins allocated by the population to function for security in the data in the order. Furthermore, the registration page intended for residents who enter personal data and the desired documents. After registering, the resident will immediately recorded into the Smart City form. On the last way, the admin will validate the resident's permit is complete and appropriate or not. Furthermore, the user can track the complainant's status so that there is no need to come to the sub-district to wait, and the results of the submission of documents can directly viewed in the user's hand phone.

4. Results and discussion

After the system has created, it has implemented in the sub-district office. In this study, we only focus on making cellular-based applications as an existing information system. From the implementation, results obtained the following results:

Get positive results based on the User Acceptance Test conducted with the sub-district. Then from the results of application testing carried out using the white box method, 80% of the system runs as desired, and 20% gets revisions for file size and file naming. For naming, we include encryption, so there will be no duplicate names and files. Based on the system's implementation above, the system will be developed again for other features added according to community needs.

5. Conclusion

With the use of this application, this public service can meet the needs of the civil service in the district that no longer need to come and queue at the area to get information and application procedures especially licensing applications; also, users can even know to what the application process is so that there is not much direct interaction with the sub-district.

References

[1] BPS Kota Malang 2020 *Kecamatan Sukun Dalam Angka 2019* (Malang: BPS)
[2] Sinambela L P 2011 *Reformasi Pelayanan Publik* (Jakarta: Bumi)
[3] Pratama I P A E 2014 *Sistem Informasi dan Implementasinya* (Bandung: Informatika)
[4] Talis Z 2019 Pengaruh Pelaksanaan Good Governance Terhadap Pelayanan Publik (Studi Pada Kantor Kelurahan Temas, Kecamatan Batu, Kota Batu) *Jurnal Ilmu Sosial dan Ilmu Politik* **VIII**(2) 178-185